

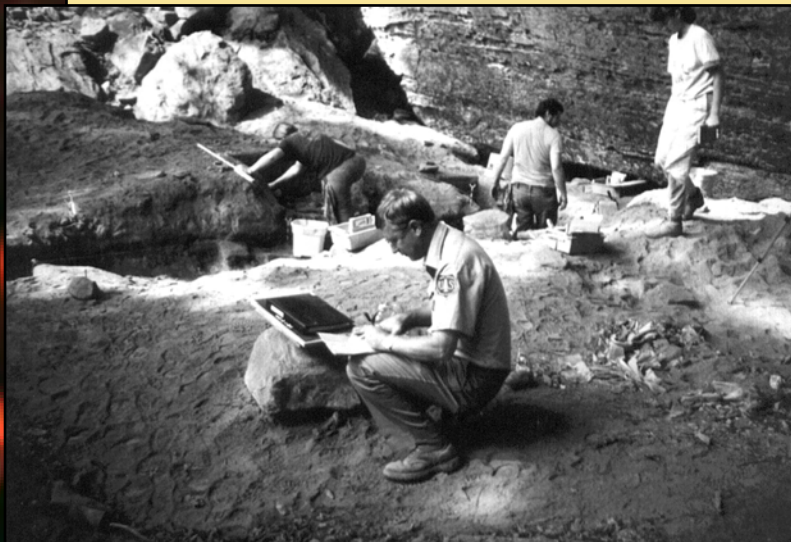
Forests, Fire & People



Both lightning set fires and those set by people helped shape past ecosystems.

Archaeologists work with other scientists to determine to what extent fire and people have shaped Kentucky's forests. One way to learn about past environments is through the study of sediment layers from ponds, such as Cliff Palace Pond in Jackson County, Kentucky.

Pollen grains in the sediments from this pond have revealed the identities of trees and plants at particular times in eastern Kentucky's history. The size of charcoal dust collected from the pond also has provided information on the relative frequency of fire through time and whether fires occurred near the pond or far from it.



Archaeologists excavate prehistoric deposits in rockshelters to recover information about the past. They carefully record the location of each artifact they find and its relationship to other artifacts.

Many people believe that the first Europeans to settle North America found an ancient impenetrable wilderness stretching uninterrupted from the shores of the Atlantic to the banks of the Mississippi.

Research has shown, however, that North American ecosystems at the time of European contact were a patchwork of different environments, consisting of moist forest communities, relatively open oak and pine forests, and grasslands.

This patchwork of environments was in large part created by fire.



Paleoecologists and archaeologists take a sample of Cliff Palace Pond sediments. The soil samples contain charcoal and pollen that help scientists determine what past environments were like.

Analysis of the charcoal from Cliff Palace Pond has shown that through time, fires set by Native Americans influenced the composition of eastern Kentucky's forests.

It also has confirmed that suppression of forest fires in the twentieth century has drastically altered these forests.

Kentucky's First Settlers



Prehistoric hunters would have set fires like this to drive game.

They also may have used fire to herd and hunt game. Native American may have set small fires to drive game animals into the waiting spears of hunters.

Groups also may have set fire to the forest floor to enhance the growth of bushes like blueberry and huckleberry and to increase the yields of nut-bearing trees.



Men used spears tipped with notched and stemmed stone spearpoints to hunt white-tailed deer, elk, turkey, and an assortment of small animals, birds, fish, and turtles.



Around 5,000 B.C. hunters began to use atlatls or spearthrowers to hunt a variety of animals.

Women collected nuts and wild plants in the deep woods, along the forest margins, and in forest openings. They used these plants for food, medicine, and dyes, and as the raw material for baskets, clothing, sandals, and mats.



An extended family at work and play. While men make spearpoints, an elder passes down legends to his grandchildren about how their ancestors used fire.

Prehistoric Gardeners



Illustration by Rex Robinson

Low-intensity fires were set to clear vegetation for gardens.

Around 1,000 B.C. Native Americans living in eastern Kentucky began to grow crops in small gardens. Within these gardens they grew squash and gourds as well as sumpweed, sunflower, and goosefoot for their starchy or oily seeds. These plants added variety to their diet and provided a more stable source of food.

Native peoples used the slash and burn method to clear their fields prior to planting. They set fires deliberately to burn off surface material and kill smaller trees and saplings. The main purpose of these fires was to create light gaps in the forest canopy for gardens. This use of fire changed the composition of the forest. Fire-tolerant trees, such as oak, hickory, and chestnut, became more common.

To kill the larger standing trees, prehistoric gardeners had two options. The women could pile wood around the base of the larger standing trees and then set fire to the wood pile. The men could use their stone axes to chop out a section of bark all around the tree (called girdling), which would kill it and allow sunlight to reach the crops.



Illustration by Rex Robinson

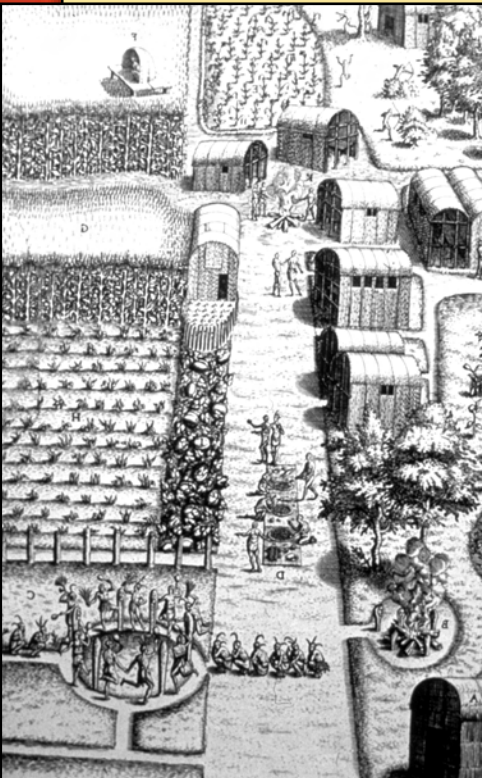
A fall harvest included sunflower, squash, and goosefoot from nearby gardens. Hickory, chestnuts, and acorns were collected from surrounding woods.

Prehistoric Farmers



Illustration by Rex Robinson

Fall harvest time in a typical rockshelter in eastern Kentucky. The harvest includes sunflower, squash, and goosefoot from nearby gardens. Hickory, chestnuts, and acorns were collected from surrounding woods.



Around 1,000 A.D., Native Americans living in eastern Kentucky began to grow corn and beans. People soon gave up their small garden plots and turned to farming extensive fields of corn, beans, squash, and tobacco. These fields were located in large fertile river bottoms.

These prehistoric farmers cleared and maintained their fields with fire in the same way their ancestors had cleared and maintained their gardens. But they did so on a much broader and more intensive scale. They, too, burned the forest to enhance animal habitat for the deer, bear, elk, and turkey they now hunted with bows and arrows.



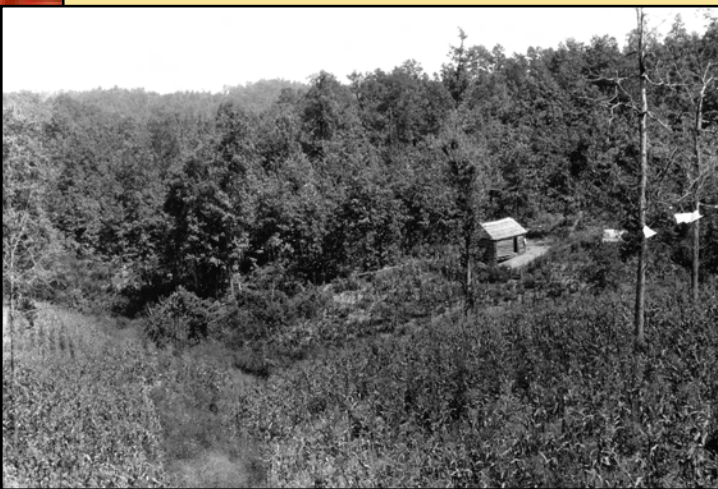
The Nineteenth Century



Farmers continued to use fire to clear the forest for crops and to return nutrients to the soil.

European settlers, like the Native American's before them, left their mark on eastern Kentucky's forests through their use of fire. In the spring, many nineteenth century Kentuckians burned the woods near their homes to clear the shrubby undergrowth. Folk wisdom said this would improve grass growth for their livestock, which they allowed to range throughout the wooded slopes.

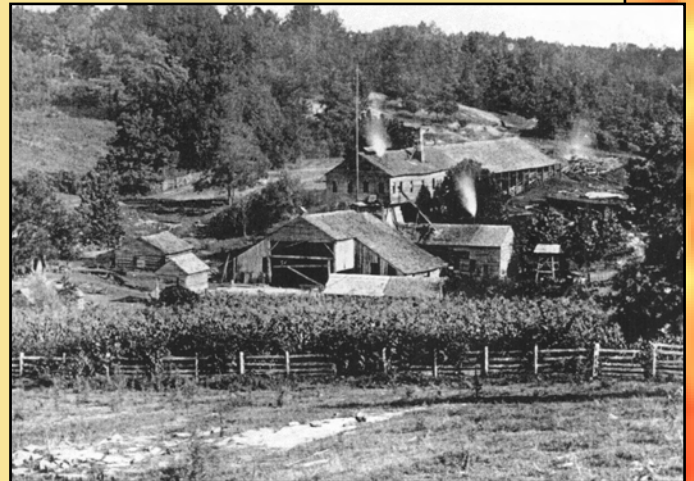
They also used fire in the fall for hunting, to prevent abandoned fields from becoming overgrown, and to reduce pests. People of Indian heritage knew that fire was a purification tool, used to rid the forest of anything unwanted.



European settlers adopted many Native American farming techniques and crops. Corn, beans, squash, and tobacco continued to be the main crops grown in early nineteenth century Kentucky gardens.

A marked change in the human-forest relationship in eastern Kentucky began with the appearance of the iron industry. Charcoal used to smelt iron was made from the hardwood forests surrounding the furnaces. Thousands of acres of trees were needed to produce enough charcoal to keep these furnaces running.

After the Civil War, huge tracts of forest were sold and cut in eastern Kentucky as a result of the logging boom (from 1870-1930). A regional population explosion followed the railroad and its attendant industries.



More than 300 acres of forest were used each year to operate iron furnaces, like this one called the Estill Iron Furnace.



Roadbeds like this one were cut through the area to transport logs.

The Twentieth Century



In the late 1800s and early 1900s, wildfires raged out of control. Fire prevention efforts intensified as a result of large disastrous fires that destroyed timber and other resources.

In addition to fire, disease also affected the composition of the forest. An example was the devastation of the American Chestnut. This fast growing tree, which was prized for its tasty nuts and for lumber, was susceptible to a deadly blight.

Within a decade, nearly all of the chestnut in eastern Kentucky were killed as the blight spread throughout the eastern United States.



Logging and clearing land for farms during the early twentieth century drastically altered eastern Kentucky's forests.

Throughout the twentieth century, the managers of eastern Kentucky's forests followed a policy of actively preventing and suppressing forest fires. The composition of the forests now reflects this policy. Eastern red cedar, saplings of tulip poplar, white pine, and black gum are replacing fire-tolerant tree species. These fire intolerant woody species, including prolific sprouters such as red maple and sassafras are increasing.

This unexpected change in the composition of eastern Kentucky's forest has led land managers to rethink the role fire plays in forest maintenance.



The American Chestnut was once one of the most important trees in Kentucky's forests.

The Forest Today



Prescribed fires restore and maintain healthy forests. Controlled burns must be conducted under professional supervision.

Today, private, state, and federal land management agencies are again setting fires in eastern Kentucky, this time under controlled conditions. These fires, called prescribed burns, are set by professionals who take into account the temperature, wind conditions, and the composition of the forest.



For the first time in nearly 200 years, elk roam freely in Kentucky. Fire helps keep the plant diversity needed for elk habitat.

To put what we have learned from research at places like Cliff Palace Pond into action, we must reintroduce frequent and light intensity fire within our forests. At the same time, we must continue to suppress wild fires on ecologically sensitive areas and in areas where fire might threaten lives and property.

Limited, focused, and controlled use of fire enhances biological diversity and can help keep the forest ecosystem in natural balance.



The American Chestnut is being restored so that it will once again become part of Kentucky's rich woodlands.

The American Chestnut, a fire dependant tree, that was once an important part of eastern Kentucky's forest is making a come back. The U.S. Forest Service is working with others to reintroduce a disease-resistant variety of the American Chestnut to Kentucky's forests. Recent developments in genetics and plant pathology promise new hope that this magnificent tree will again become part of our natural heritage.

This exhibit was prepared by the Kentucky Heritage Council, the Daniel Boone National Forest, and the Kentucky Archaeological Survey (jointly administered by the Kentucky Heritage Council and the University of Kentucky Department of Anthropology).